

A NEW GENUS AND THREE NEW SPECIES OF THE  
FAMILY CONGROGADIDAE (PISCES, PERCIFORMES)  
FROM NATAL, SOUTH AFRICA

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(With 3 figures)

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ABSTRACT

Examination of two lots and six specimens of a congrogadid from Natal which had been identified as *Halidesmus scapularis* Günther, 1871, has led to the proposal of a new genus, *Natalichthys*, with three new species, *N. leptus*, *N. ori* and *N. sam*. The range of *H. scapularis* is restricted to the coast between False Bay and the Umtata River mouth, Transkei.

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INTRODUCTION

*Halidesmus scapularis* is a well-known South African intertidal congrogadid, ranging from False Bay to Coffee Bay, Transkei. Günther (1871: 668, 669) described the genus and species based on two specimens from Port Elizabeth, adding in parentheses 'Port Natal'. A misinterpretation of Port Natal for Natal could explain why Gilchrist & Thompson (1917a: 220) placed *H. scapularis* in Part 1 of their 'A catalogue of sea fishes recorded from Natal', and why, in Part 2 (1917b: 416) they recorded it as being from '(Port Natal)'. Later, however, Barnard (1927: 871) gave the locality for this species as 'False Bay, Algoa Bay, Natal coast, down to 50 fathoms'. It was presumably this notation that was used by Smith (1961) and Smith & Smith (1966) to report the range of *H. scapularis* as being from False Bay to Natal, although Smith (1952: 100), in his earlier review of south and east African congrogadids, restricted the range from False Bay to East London. A list of the South African Museum's holdings of *H. scapularis* included two lots with a total of six specimens from off Natal. Extensive collecting by personnel from the J.L.B. Smith Institute of Ichthyology during the last decade in the area between Port Elizabeth and

Sodwana Bay, KwaZulu, failed to produce specimens of *H. scapularis* north of the Umtata River mouth, Transkei. Therefore, the two lots from Natal were of considerable interest, and were borrowed for examination. The six specimens proved to represent a new genus comprised of three new species.

## METHODS

Counts and measurements are conventional (Hubbs & Lagler 1964) except that head length is measured from the tip of the snout to the tip of the opercular spine, and only the pored lateral-line scales are counted. Since the spine of the first dorsal fin is nearly or barely connected to the base of the first dorsal-fin ray, the condition is expressed by a slash between spine and ray counts (e.g. DI/42-43). The abbreviation SAM is an acronym for the South African Museum, Cape Town.

## DESCRIPTIONS

### *Natalichthys* gen. nov.

#### *Type species*

*Natalichthys ori* sp. nov.

#### *Diagnosis*

The new genus is placed in the family Congrogadidae because, among other reasons, it lacks anal spines, has a single dorsal spine not (or barely) attached to the base of the first dorsal-fin ray, lacks palatine teeth and has a single, spur-like opercular spine. *Natalichthys* primarily differs from other congrogadid genera in a combination of characters. The following three characters, taken together, will distinguish the genus from all other described congrogadids: pelvic fin of one spine and two rays (I,2), gill membranes united but free from isthmus, a single short lateral line.

#### *Comparison*

Only two other congrogadid genera possess a I,2 pelvic fin (*Blennodesmus* and *Halidesmus*, both monotypic). *Natalichthys* differs from the eastern Australian *Blennodesmus* in having the gill membranes free of the isthmus (v. fused), and in the presence of a supraotic sensory canal pore (v. absent). *Halidesmus* (which appears to be closely related to the monotypic *Phloioides* from Pakistan and India) possesses at least three complete lateral-lines (v. a single incomplete lateral-line), seven (v. six) preopercular sensory canal pores, and a sensory canal pore between the first suborbital and first preopercular sensory canal pores (v. absent). *Phloioides* agrees with *Halidesmus* in all these characters, but differs from that genus in lacking pelvic fins (v. present) and in having eight (v. 10) pectoral rays. Anatomical studies presently being undertaken will hopefully allow monophyletic supraspecific taxa to be proposed



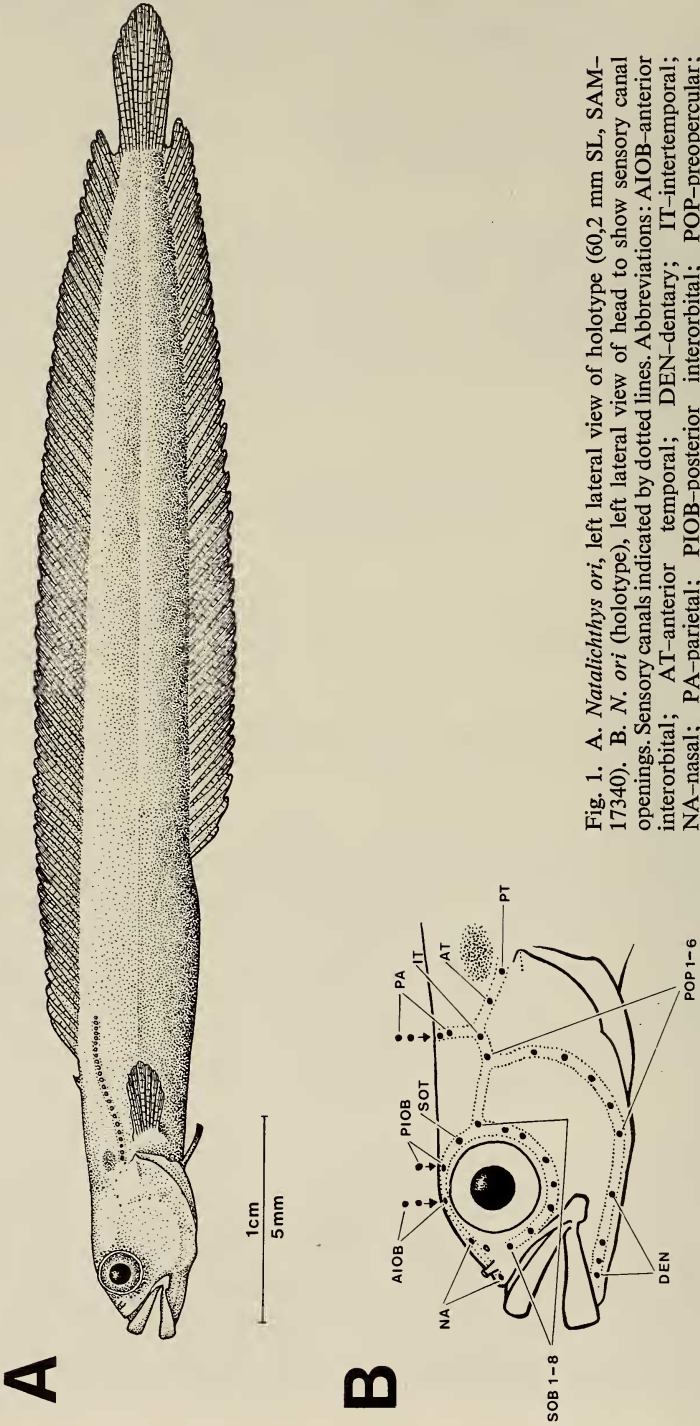


Fig. 1. A. *Natalichthys ori*, left lateral view of holotype (60,2 mm SL, SAM-17340). B. *N. ori* (holotype), left lateral view of head to show sensory canal openings. Sensory canals indicated by dotted lines. Abbreviations: AIOB-anterior interorbital; AT-anterior temporal; DEN-dentary; IT-intertemporal; NA-nasal; PA-parietal; PIOB-posterior interorbital; POP-posterior temporal; PT-posterior temporal; SOB-suborbital; SOT-supraotic. Drawn by A. Odum.

(26,2); snout length 22,2 (23,8); bony interorbital 7,7 (7,1); upper-jaw length 37,8 (38,1); lower-jaw length 54,4 (52,4); pectoral-fin length 44,4 (45,2); pelvic-fin length 23,3 (25,0); length of first dorsal-fin ray 24,4 (27,4); tenth 38,9 (44,0); twentieth 50,0 (46,4); thirtieth 48,9 (47,6); fortieth 47,8 (50,0); penultimate 47,8 (50,0); length of first anal-fin ray 22,2 (23,8); tenth 33,3 (35,7); twentieth 34,4 (36,9); thirtieth 35,6 (38,1); penultimate 38,9 (44,0).

Dorsal fin I/52–53, first five rays of holotype and first ray only of paratype unbranched; A 42–43, first ray of holotype and no rays of paratype unbranched; pectoral fin 9; pelvic fin I,2, spine rudimentary; caudal fin with two dorsal procurrent rays, the posteriormost ray with a few segmentations, five dorsal and five ventral principal rays (the dorsalmost and ventralmost unbranched in the holotype, branched in the paratype), two ventral procurrent rays, the posteriormost ray with a few segmentations in the paratype but not in the holotype. Caudal fin connected to dorsal and anal fins by a membrane which reaches about half-way along the length of the last dorsal- and anal-fin rays.

Sensory canal openings (Fig. 1B—all pores bilateral except where otherwise stated): nasal double, with one just posterior to upper lip and the other just behind posterior nostril; an anterior interorbital and a single, median posterior interorbital; a supraotic (absent on left side of paratype); eight suborbitals; six in preopercular canal; four in dentary. An intertemporal; anterior and posterior post-temporal; and two parietal pores.

Gill membranes fused to each other in ventral midline, but free from isthmus. Six branchiostegal rays; gill rakers on first arch with two to three epibranchial, one in angle, and seven to eight ceratobranchial = (2–3) + 1 + (7–8). A single, short, incomplete lateral line ending beneath the third ray of soft dorsal fin, consisting of 22–23 pored scales. Olfactory capsule with two nostrils, anterior a short tube, posterior pore-like. Cheeks and opercles naked, body scaled almost to parietal commissure with small, elliptical, cycloid scales. Pseudobranch with five lobes.

Vomer and palate edentate. Jaw teeth conical, slightly recurved, decreasing in size posteriorly. A short inner row of about four teeth in upper jaw, two in lower jaw.

Colour pattern (alcohol-preserved specimens)—plain yellow-brown with a diffuse, somewhat elliptical dark blotch (about half eye diameter) on shoulder above opercle. The blotch was apparently unocellated—although the material appears faded.

### *Etymology*

The specific name *ori* (treated as a noun in apposition) is the acronym of the Oceanographic Research Institute, Durban, whose Directors (Drs D. H. Davies and A. E. F. Heydorn) and staff have contributed greatly to the knowledge of South Africa's coastal marine fauna.



*Natalichthys sam* sp. nov.

Fig. 2

*Holotype*

SAM-21915, 42,7 mm SL (48,5 mm TL), Indian Ocean, off Port Shepstone, south coast of Natal, South Africa (30°47'06"S 30°29'06"E), 44 m, stony bottom. Collected by University of Cape Town (NAD 2x), 17 May 1958.

*Paratype*

SAM-28940, 40,3 mm SL (44,5 mm TL), collected with holotype.

*Diagnosis*

Differs from the other two species in the genus in the lower number of dorsal and anal-fin rays (DI/42, A 32 v. DI/48-53, A 39-43), one more pectoral-fin ray (10 v. 9), and four to six teeth on the vomer (v. two or none). It can be further separated from *N. ori* in having a single ventral procurrent caudal-fin ray (v. two), and fewer lower gill rakers on the first gill arch (five v. seven to eight). Additional characters separating *N. sam* from *N. leptus* include first ray of dorsal fin unbranched (v. branched), one more dorsal procurrent caudal-fin ray (two v. one) and naked cheeks (v. scaled cheeks).

*Description*

A short, small (42,7 mm maximum recorded SL) congrogadid known only from two specimens collected off Natal. The following counts and measurements are given for the holotype, with values for the paratype in parentheses where different. As per cent standard length: soft dorsal-fin base 73,1 (69,5); anal-fin base 55,3 (51,1); snout tip to dorsal-fin spine origin 23,4 (26,1); snout tip to first dorsal-fin ray origin 26,0 (27,8); snout tip to first anal-fin ray origin 44,5 (46,4); head length 18,3 (18,9). As per cent head length: head depth at parietal commissure 59,0 (56,6); body depth at anal-fin origin 57,7 (59,2); eye diameter 25,6 (25,0); snout length 21,8 (22,4); bony interorbital 7,7 (6,6); upper-jaw length 38,5 (34,2); lower-jaw length 51,3 (53,9); pectoral-fin length 53,8 (50,0); pelvic-fin length 24,4 (26,3); length of first dorsal ray 26,9 (26,3); tenth 44,9 (44,7); twentieth 47,4; thirtieth 51,3; penultimate 52,6; length of first anal-fin ray 26,9 (22,4); tenth 38,5 (36,8); twentieth 39,7 (39,5); penultimate 51,3 (42,1).

Dorsal fin I/42, only first ray unbranched; A 32, all rays branched; pectoral fin 10, pelvic fin I,2, spine rudimentary; caudal fin of two procurrent and five principal dorsal rays, and one procurrent and six principal ventral rays. The second (more posterior) dorsal procurrent ray has a few segmentations near its tip in the paratype, but is unsegmented in the holotype. Caudal fin connected to dorsal and anal fins by a membrane which reaches to about the midpoint of the length of the last dorsal- and anal-fin rays.

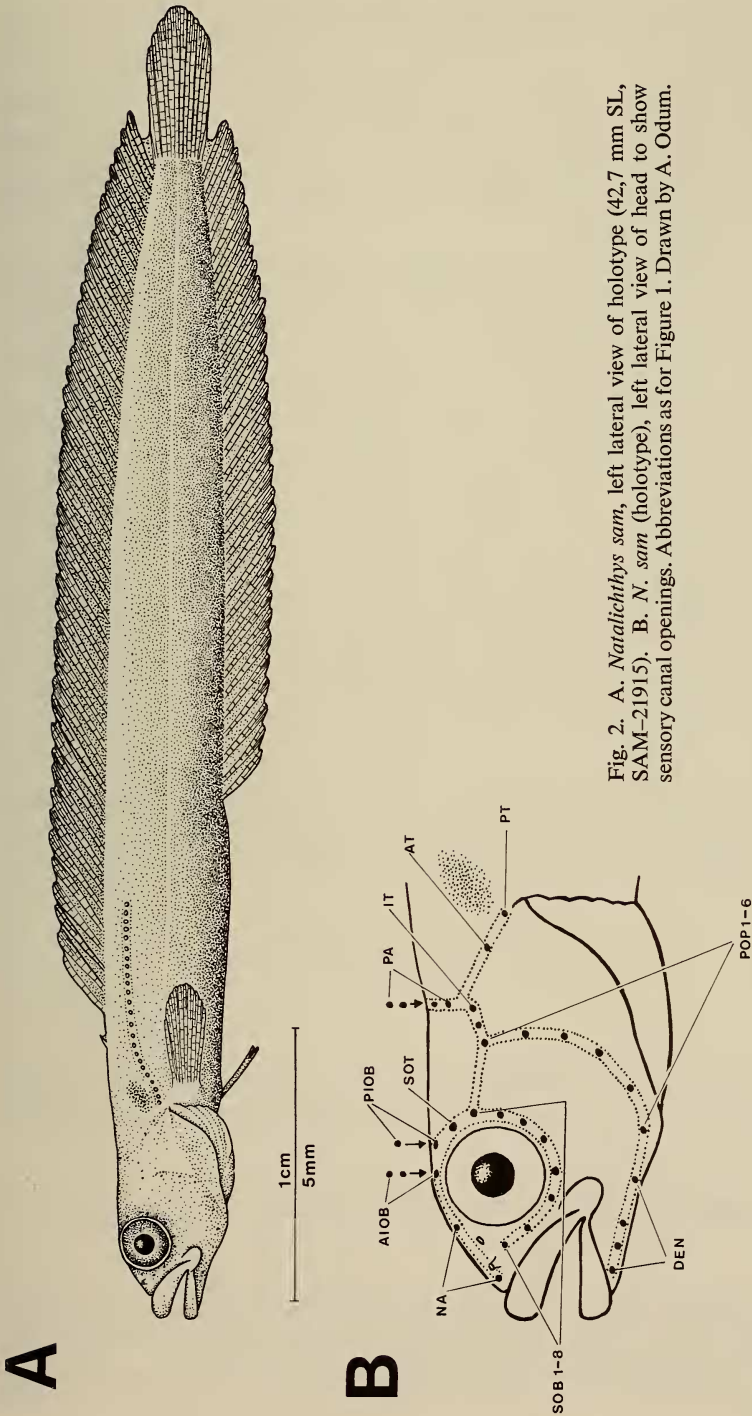


Fig. 2. A. *Natalichthys sam*, left lateral view of holotype (42,7 mm SL, SAM-21915). B. *N. sam* (holotype), left lateral view of head to show sensory canal openings. Abbreviations as for Figure 1. Drawn by A. Odum.

Sensory canal openings (Fig. 2B—all pores bilateral except where stated otherwise): nasal double, with one just posterior to the upper lip and the other just behind the posterior nostril; an anterior interorbital and a single, median posterior interorbital; a supraotic; eight suborbitals; six in preopercular canal; four in dentary. An intertemporal; anterior and posterior posttemporal; and two parietal pores. In addition, an extra pore between the dorsalmost preopercular pore and the intertemporal pore is present on the left, but not the right, sides of both specimens.

Gill membranes fused to each other in ventral midline, but free from isthmus. Six branchiostegal rays; gill rakers on first arch with two epibranchial, one in angle and five ceratobranchial = 2 + 1 + 5. A single, short, incomplete, lateral line ending beneath the sixth dorsal-fin ray, consisting of 22–27 pored scales. Olfactory capsule with two nostrils, anterior a short tube, posterior pore-like. Cheeks and opercles naked, body scaled up to the parietal commissure with small, elliptical cycloid scales. Pseudobranch short, with five lobes.

A few (four to six) conical teeth on vomer, none elsewhere on palate. Jaw teeth conical, slightly curved, anterior largest, decreasing irregularly in size posteriorly. Inner patch of small teeth behind symphysis in both jaws, an inner row continuing posteriorly half as far as the outer row.

Colour pattern (alcohol-preserved specimens)—plain yellow-brown with a somewhat elliptical dark blotch (about three-quarters eye diameter) on shoulder above opercle. The blotch was apparently unocellated (ocellated in many congrogadids), but the material is somewhat faded.

### *Etymology*

The specific name *sam* (treated as a noun in apposition) is the acronym for the South African Museum, Cape Town, whose ichthyologists, Dr P. A. Hulley and Miss E. Louw, have always been most co-operative and good company.

### *Natalichthys leptus* sp. nov.

Fig. 3

### *Holotype*

SAM-28938, 57,2 mm SL (63,9 mm TL), Umhlangakulu River, Natal, South Africa (30°04'10"S 30°21'47"E ?). No further data, but see discussion.

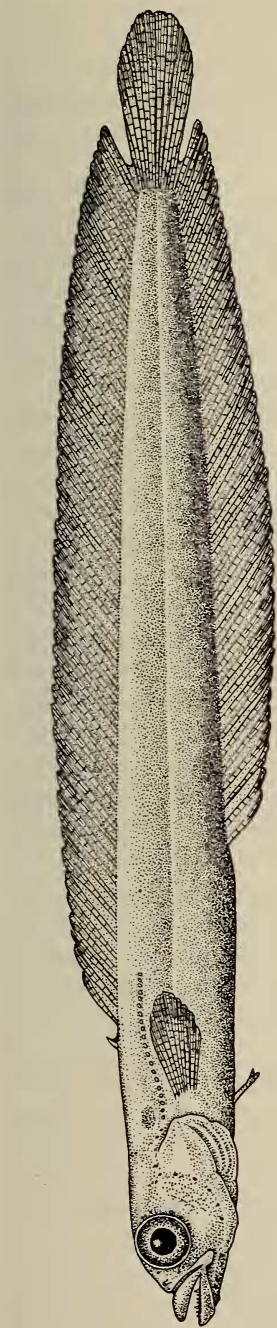
### *Paratype*

SAM-28939, 49,7 mm SL (56,9 mm TL), collected with holotype.

### *Diagnosis*

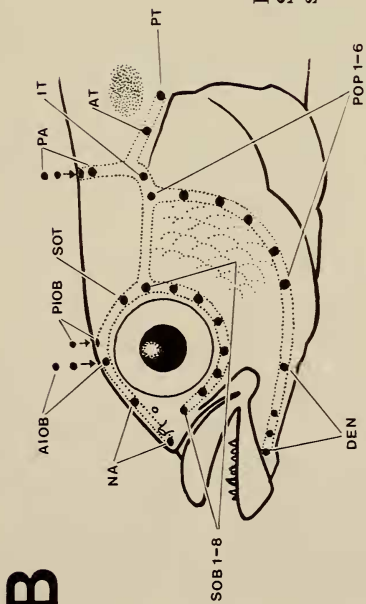
Differs from the other two species in the genus in fin-ray counts (DI/48, A 39 v. DI/42 or 52–53, A 32 or 42–43), in having the first dorsal-fin ray branched (v. unbranched), in a single dorsal procurrent caudal-fin ray (v. two),





**A**

1cm  
5mm



**B**

Fig. 3. A. *Natalitichthys leptus*, left lateral view of holotype (57,2 mm SL, SAM-28938). B. *N. leptus* (holotype), left lateral view of head to show sensory canal openings. Abbreviations as for Figure 1. Drawn by A. Odum.

and in possessing scales on the cheeks. It differs from *N. sam* in having nine (v. ten) pectoral-fin rays, and in having two or no vomerine teeth (v. four to six). Additional differences from *N. ori* include a single ventral procurent caudal-fin ray (v. two) and a lower number of gill rakers on the lower limb (five to six v. seven to eight).

### *Description*

A small (57,2 mm SL maximum recorded SL) congrogadid known only from two specimens collected off Natal. The following counts and measurements are given first for the holotype, with values for the paratype in parentheses where different. As per cent standard length: soft dorsal-fin base 69,2 (74,8); anal-fin base 55,6 (59,6); snout tip to dorsal-fin spine origin 23,0 (22,5); snout tip to first dorsal-fin ray origin 25,3 (25,2); snout tip to first anal-fin origin 41,4 (41,6); head length 17,5 (16,9). As per cent head length: head depth at parietal commissure 54,0 (54,8); body depth at anal-fin origin 49,0 (53,8); eye diameter 26,0 (26,2); snout length 25,0; bony interorbital 7,0 (7,1); upper-jaw length 36,0 (38,1); lower-jaw length 55,0 (54,8); pectoral-fin length 53,0 (51,2); pelvic-fin length 21,0 (25,0); length of first dorsal-fin ray 21,0 (23,8); tenth 45,0 (42,6); twentieth 47,0 (46,4); thirtieth 54,0 (53,6); fortieth 55,0 (53,6); penultimate 46,0 (54,8); length of first anal-fin ray 21,0 (25,0); tenth 29,0 (34,5); twentieth 32,0 (38,1); thirtieth 35,0 (41,7); penultimate 40,0 (47,6).

Dorsal fin I/48, all rays branched; A 39, all rays branched; pectoral fin 9; pelvic fin I,2, spine rudimentary; caudal fin with one dorsal procurent ray, five branched principal dorsal and five branched principal ventral rays, and a single ventral procurent ray. Both dorsal and ventral procurent rays with a few striations in holotype, no striations in paratype. Caudal fin connected to dorsal and anal fins by a membrane which reaches about one-third along the length of the last dorsal- and anal-fin rays.

Sensory canal openings (Fig. 3B—all pores bilateral except where otherwise stated): nasal double, with one just posterior to upper lip and the other just behind posterior nostril; an anterior interorbital, and a single, median posterior interorbital (paratype only); a supraotic; eight suborbitals; six in preopercular canal; four in dentary. An intertemporal; anterior and posterior posttemporal; and two parietal pores.

Gill membranes fused to each other in ventral midline, but free from isthmus. Six branchiostegal rays, gill rakers on first arch with two to three epi-branchial, one in angle and five to six ceratobranchial (= 2 - 3 + 1 + 5 - 6). A single, short, incomplete lateral line ending beneath the third to fourth ray of soft dorsal fin; consisting of 20-24 pored scales. Olfactory capsule with two nostrils, anterior a short tube, posterior pore-like. Cheeks, but not opercles, with small, elliptical, cycloid scales, body scaled to parietal commissure with similar scales. Pseudobranch with six lobes in holotype, five in paratype.

A single minute tooth on either side of the head of the vomer in paratype, none in holotype; rest of palate edentate. Jaw teeth stoutly conical, decreasing

in size posteriorly. A short inner row of five teeth in upper jaw, three in lower jaw.

Colour pattern (alcohol-preserved specimens)—plain yellow-brown, with a diffuse, elliptical dark blotch (about three-quarters eye diameter) on shoulder above opercle. Blotch apparently unocellated.

### *Etymology*

From the Greek *leptos*, like a scale or peel, thin, fine, small, delicate; in allusion to the scaled cheeks of the new species. Treated as a noun in apposition.

## DISCUSSION

Two of the species, *N. ori.* and *N. leptus*, were in the same lot. The only data accompanying the lot consisted of the catalogue number, and 'Umhlangakulu River, Natal' Congrogadids have not previously been recorded from fresh or estuarine waters. It seems probable that these specimens were collected off the mouth of the river, in the sea. Additional circumstantial evidence for this comes from Barnard's statement (1927: 871) that *Halidesmus scapularis* had been collected from the Natal coast at 50 fathoms. This specific statement of depth and place indicates that he had specimens with that data. There are no specimens of *H. scapularis* from that depth and locality at the South African Museum (where Barnard worked). The South African Museum specimens labelled as *H. scapularis* from Natal represent the material forming this paper. The specimens here described as *N. sam* were collected in 1958 (31 years after publication of Barnard's monograph), and therefore cannot represent his material. Thus it is probable that the lot on which Barnard based his statement of range and depth is the one now labelled as being from Umhlangakulu River. The original catalogue entry for this lot (SAM-17340) is in Barnard's handwriting (E. Louw, pers. comm.).

A further point is of interest here. Although Gilchrist & Thompson's (1917*b*) statement of Port Natal as a locality for *H. scapularis* appears to be taken directly from Günther's (1871) description of the types (see introduction), it is possible that they may have had additional specimens identified as *H. scapularis* from Natal. In this context, P. Heemstra (pers. comm.) informed the author that there is an 'Umhlangankulu' estuary served by a short (6.5 km) river located at 30°56'45"S 30°18'E, which thus lies some 34 km south-west of Port Shepstone. P. A. Hulley (pers. comm.) searched the original catalogues of the R.S. Pieter Faure and found the following: '14 March, 1901. Umhlangakulu [sic] River NW by N, 7½ miles. Dredge, 12.50-1.00 p.m.'. The co-ordinates for this station would then be 31°04'10"S 30°21'47"E. The evidence, although circumstantial, appears to indicate strongly that *N. ori* and *N. leptus* were taken at this station.

In summary, then, it appears probable that (i) Gilchrist & Thompson's (1917*b*) record of *H. scapularis* was taken directly from Günther's description

and (ii) that the specimens of *N. ori* and *N. leptus* were collected at 30°04'10"S 30°21'47"E off the Natal south coast near Port Edward at a depth of 90 m (50 fm.) on 14 March 1901.

### ACKNOWLEDGEMENTS

I thank the South African Museum for allowing me to report on the specimens and Dr P. Hulley and Miss E. Louw for the information on the Faure stations, catalogue data and geography. Dr P. Heemstra of the J.L.B. Smith Institute of Ichthyology, Grahamstown, kindly sent me the co-ordinates for the Umhlangankulu River. Drs E. J. Crossmand and A. R. Emery of the Royal Ontario Museum commented on the manuscript, and Mr Anker Odum (ROM) expertly prepared the figures for me.

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